UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,516	12/05/2001	Rodney William Pope	30691-00045	2615

8

7590 08/25/2003

Gibson, Dunn & Crutcher LLP
1801 California Street, Suite 4100
Denver, CO 80202

EXAMINER
MENON, KRISHNAN S

ART UNIT	PAPER NUMBER
1723	

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/007,516	POPE ET AL.
	Examiner	Art Unit
	Krishnan S Menon	1723

-- The MAILING DATE of this communication appears on the cov r sheet with th correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10-9-03* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38 and 45-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38 and 45-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claims 1-38 and 45-61 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-4, 13-16, and 25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Antoni et al (US 5,236,586).

Antoni (586) teaches a filter device comprising a housing with ends (at 4), a ring joinable to the end with an annular anchor(15) on the interior portion of the ring, a flange cap (4),potting material (3) and plurality of hollow fiber membranes (2), inlet and outlet ports through the flange caps (5,6) and housing (11,12); all in fig 1, as in instant claim 1-3, 14 and 15. The microfiber is hollow fiber and semipermeable as in instant claim 4 and 16. The housing is cylindrical as in instant claim 13 and 25.

2. Claims 26 – 30, 34 and 35 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Antoni (586).

Antoni (586) teaches a filter device prepared by the process comprising joining a ring having an annular anchor (15-fig 1) on an end of a housing, inserting a plurality of micro-fibers in the housing, encasing the microfibers and the anchor in a potting material and joining a flange cap to the ring as in instant claims 26 and 28 (col 2 lines 17-51). The filter device formed also has inlet and outlet ports on the flange cap and the housing (see fig 1) as in instant claim 35. The different

process steps of welding, centrifuging, etc. as in instant claims 27,29,30 and 34 are immaterial to the product as the product limited by the process is non-patentable over the prior art if the product formed is same as or obvious from the prior art made by a different process (**In re Thorpe**, 227 USPQ 964 (1985).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 8-11, 20-23, 31-33 and 55-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antoni (586) in view of Lacy et al (US 6,280,619).

Claims 8-11, 20-23, 31-33: Antoni (586) teaches all the elements of the instant claims as in claims 1-4, 13-16, 25, 26, 28 and 35, and welding as a means to join the ring and the end caps to the housing (col 2 lines 33-38 and 66-68), but does not teach spin welding as the welding means. Lacy (619) teaches spin welding as a means for joining housing and end cap of a filter (see fig 4 and 5).

Instant claims 8 and 20 recite spin welding; 9, 21 and 31 recite the nubs to assist spin welding; and 10,11,22,23,32 and 33 recite the channels to contain the flash from the spin weld. Details of spin welding including the "nubs" or ledges (46), shield or 'flash' cover (48), and channels formed to contain the flash (at 70 or 48) are seen in fig 4 and 5 and col 3 lines 47-57 of Lacy (619). It would be obvious to one of ordinary skill in the art at the time of invention to use spin-welding as taught by Lacy (619) as a welding means to attach the end caps and the rings to the housing as taught by Antoni (586) for the hollow fiber filter device, because spin welding is a commonly used, quick and in-expensive means to weld plastic parts. The specific structural details provided for spin welding (like the nubs and the channels) do not structurally change the apparatus.

Claims 55-58: Antoni (586) teaches a filter device comprising a housing with ends (at 4), a ring joinable to the end with an annular anchor (15) on the interior portion of the ring, a flange cap (4), potting material (3) and plurality of hollow fiber membranes (2), inlet and outlet ports through the flange caps (5,6) and housing (11,12); all in fig 1, as in instant claim 55 and 56. The filter device formed also has inlet and outlet ports on the flange cap and the housing (see fig 1) as in instant claim 57.

Antoni (586) also teaches a means for joining the ring, the end-caps and the housings (col 2 lines 33-38 and 66-68), but is silent on the details of accommodating the residue form the joining of the parts as in the instant claims. Lacy (619) teaches such a means for joining housing and end cap of a filter (see fig 4 and 5) with shield or 'flash' cover (48), and channels formed to contain the flash (at 70 or 48) are seen in fig 4 and 5 and col 3 lines 47-57. It would be obvious to one of ordinary skill in the art at the time of invention to use the methods of accommodating residue form the joining of the parts as taught by Lacy (619) in the teachings of Antoni (586) since Antoni is unclear on such details.

2. Claims 50,51 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (US 5,472,601).

Eguchi (601) teaches a housing with a first end having a ring joinable to the first end (fig 1-7), a plurality of hollow fibers inside the ring encased in potting material, the ring forming an annular anchor in the inside of the housing for the potting material, the rims of the ring forming ridges preventing delamination of the potting material, and an flange-cap joinable to the first end as in instant claim 50 (see col 4 lines 16-65). Eguchi also teaches radial channels for air escape in the rings as in instant claim 53 (5-fig 1,2)

Eguchi (601) teaches more than one rings to improve the anchoring (col 4 lines 37-47) with upper and lower edges, but does not teach multiple rounded ridges on the ring. However, it would be obvious to one of ordinary skill in the art at the time of invention that the there could be one or more rings with one or more ridges in each ring to improve the anchoring and reduce the delamination, and the ridges could be rounded instead of sharp, as one would round off sharp edges for safety.

Eguchi (601) does not teach a second end with the same arrangement as the first end as above as in instant claim 51, since Eguchi's design is having hollow fiber bundles in a U bend, and potted only on one end. However, it would be obvious to one of ordinary skill in the art at the time of invention to duplicate the first-end design in the second end for hollow fiber bundles potted at both ends of the housing.

3. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (601) as in view of Antoni (586).

Eguchi (601) teaches all the elements of claim 52 as in 51 above, except that Eguchi is silent on the inlet and outlet ports for the filter device. Antoni (586) teaches hollow fiber filter devices with inlet and outlet ports on both the tube (fiber) side and the shell side (see fig 1). It would be obvious to one of ordinary skill in the art at the time of invention to have a hollow fiber device as taught by Antoni in the teachings of Eguchi for mass transfer between two fluids.

4. Claims 1, 5-7, 14, 17-19, 26, 36-38, 45,46,48,49, 50,51 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (US 5,472,601) in view of Elgas et al (US 5,922,202).

Eguchi (601) teaches a housing with a first end having a ring joinable to the first end (fig 1-7), a plurality of hollow fibers inside the ring encased in potting material, the ring forming an annular anchor in the inside of the housing for the potting material, and an flange-cap joinable to the first end as in instant claims 1, 14, 26,45,50, and 51. The rims of the ring forming ridges prevent delamination of the potting material as in instant claims 6,17, 37, and 48 (see col 4 lines 16-65). Eguchi also teaches radial channels for air escape in the rings as in instant claims 7,19, 38 and 49(5-fig 1,2)

Eguchi (601) teaches more than one ring to improve the anchoring (col 4 lines 37-47) with upper and lower edges, but does not teach multiple rounded ridges on the ring, as in instant claims 6,17, 37, and 48. However, it would be obvious to one of ordinary skill in the art at the time of invention that the there could be one or more rings with one or more ridges in each ring to improve the anchoring and reduce the delamination, and the ridges could be rounded instead of sharp; one would round of sharp edges for safety during handling.

Eguchi (601) does not teach surface treatment to modify the surface energy of the anchor as in instant claims 5,17,36,45 and 46. Elgas (202) teaches surface treatment by corona discharge of the

hollow fiber surfaces to improve the bond between the hollow fibers and the potting compound in a hollow fiber device (col 8 lines 45-55). It would be obvious to one of ordinary skill in the art at the time of invention to have such a surface treatment on the anchors of the ring of the teaching of Eguchi (601) to improve the bonding of the potting material on the surface and prevent delamination.

Eguchi (601) does not teach a second end with the same arrangement as the first end as above as in instant claims 46 and 51 since Eguchi's design is having hollow fiber bundles in a U bend, and potted only on one end. However, it would be obvious to one of ordinary skill in the art at the time of invention to duplicate the first-end design in the second end for hollow fiber bundles potted at both ends of the housing.

5. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (601) in view of Elgas et al (202) as applied to claim 46 above, and further in view of Antoni (586).

Eguchi (601) in view of Elgas (202) is silent on the inlet and outlet ports for the filter device as in instant claim 47. Antoni (586) teaches hollow fiber filter devices with inlet and outlet ports on both the tube (fiber) side and the shell side (see fig 1). It would be obvious to one of ordinary skill in the art at the time of invention to have a hollow fiber device as taught by Antoni in the teachings of Eguchi for mass transfer between two fluids.

6. Claims 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (US 5,472,601) in view of Elgas et al (US 5,922,202) and further in view of Lacy (619).

Eguchi (601) teaches a housing with a first end having a ring joinable to the first end (fig 1-7), a plurality of hollow fibers inside the ring encased in potting material, the ring forming an annular

anchor in the inside of the housing for the potting material, and an flange-cap joinable to the first end (as in independent claim 55). The rims of the ring forming ridges prevent delamination of the potting material as in instant claim 60 (see col 4 lines 16-65). Eguchi also teaches radial channels for air escape in the rings as in instant claim 61(5-fig 1,2).

Eguchi (601) teaches more than one ring to improve the anchoring (col 4 lines 37-47) with upper and lower edges, but does not teach multiple rounded ridges on the ring, as in instant claim 60. However, it would be obvious to one of ordinary skill in the art at the time of invention that the there could be one or more rings with one or more ridges in each ring to improve the anchoring and reduce the delamination, and the ridges could be rounded instead of sharp, as one would round off sharp edges for safety.

Eguchi (601) does not teach surface treatment to modify the surface energy of the anchor as in instant claims 59. Elgas (202) teaches surface treatment by corona discharge of the hollow fiber surfaces to improve the bond between the hollow fibers and the potting compound in a hollow fiber device (col 8 lines 45-55). It would be obvious to one of ordinary skill in the art at the time of invention to have such a surface treatment on the anchors of the ring of the teaching of Eguchi (601) to improve the bonding of the potting material on the surface and prevent delamination.

Eguchi (601) in view of Elgas (202) teaches means for joining the ring and the flange cap and the housing (Eguchi: col 5 lines 40-45), but is silent on the details of accommodating the joining residue. Lacy (619) teaches such a means for joining housing and end cap of a filter (see fig 4 and 5) with shield or 'flash' cover (48), and channels formed to contain the flash (at 70 or 48) are seen in fig 4 and 5 and col 3 lines 47-57. It would be obvious to one of ordinary skill in the art at the time of invention to use the methods of accommodating residue form the joining of the parts as taught by

Lacy (619) in the teachings of Eguchi (601) in view of Elgas (202) since Eguchi is unclear on such details.

7. Claims 12 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antoni (586) in view of Gizowski et al (US 6432307 B1).

Antoni (586) teaches all the elements of instant claims as in claim 1 or 14 above, except for the laser welding. Gizowski (307) teaches laser-welding parts of a housing of a filter (Fig 1, col 3 lines 8-25). It would be obvious to one of ordinary skill in the art at the time of invention to use laser weld as taught by Gizowski to join the parts in the teachings of Antoni (586) for the welded joints of Antoni (586) because Antoni does not specify a weld, and laser weld is clean without spatters or flash.

Response to Arguments

Applicant's arguments filed 6/9/03 have been fully considered but they are not persuasive.

Argument regarding independent claims 1 and 14: Applicant argues that ring (108) is joined to first end (410/412) of housing (102) in claim 1 and 14, whereas, in the reference, ring (15) is not joined to the housing. Claim 1 and 14 recite 'first ring joinable to said first end'. Ring 15 of the reference is joined to the first end of the housing with the end cap (see fig 3) or directly (col 2 lines 33-43). Re the "a first flange cap (106) joinable to said first ring (108) forming a first seal", see the glue 20b in fig 3, which seals the ring (15) with the end cap.

Argument re claim 26: the claim recites 'joining a first ring to the first end'. The reference has the ring 15 joined to the first end, either via the end cap (see fig 3) or directly (col 2 lines 33-43). Ref also has the seal 20b between the first ring and the end-cap. Re argument about the process of

preparing, claim 26 is product by process. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re *Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Argument re spins welding in claims 8,20 and 30: Primary ref Antoni teaches spin welding as a means for joining housing and end cap. Secondary ref Lacy is used to show that spin welding is commonly used in welding of plastic parts, especially, parts of filter housings and end caps. Re nubs of claims 9, 21 and 31, they are specific structural details provided for spin welding which melts away during welding, and does not structurally change the apparatus.

Re claim 10,22 and 32, annular channel for capturing flash: again, secondary ref Lacy teaches structural details for capturing such flash, and one of ordinary skill would use such details in the teaching of the primary ref Antoni.

Re claims 11, 23 and 33, (indent "d", page 26): Applicant agrees that the secondary ref Lacy teaches an annular channel for capturing flash during spin welding. Secondary ref is used to show spin welding details, and one of ordinary skill could use the teaching of Lacy in the teaching of Antoni to make the joints spin-welded.

Argument re claims 55-58 (page 27 of response): as above, Lacy is a secondary ref used to show teaching of spin welding.

Re rounded ridges in claim 50,51 and 53 (page 27-28 of response) Eguchi teaches one or more rings to prevent delamination of the potting material; the structure being provided for increased surface area of contact (see col 4 lines 36-47) like the applicant argues. The ring is wedge

shaped, and has ridges appending from it upward and downward, like the ridges of the applicant (see the figure 2). Re rounded ridges vs wedge shaped edges, both are structural variations that serve the same purpose, and the applicant has not shown any superiority of the rounded ridges over the wedge shaped edges.

Argument re claim 52: Claim 52 ads inlet and outlet ports to claim 51, which primary ref Eguchi fails to teach. Secondary ref Antoni teaches such inlet and outlet ports. Applicant argues that the inlet and outlet ports of Antoni are located differently from the applicant's invention, but does not explain what the differences are. The examiner does not see any difference between the location of the inlet/outlet ports of the applicant and that of the Antoni ref.

Arguments re claims rejected based on Eguchi ref in view of Elgas ref: (page 29 of response): Secondary ref Elgas is used for it's teaching of corona discharge as surface treatment for improved bonding in the teaching of Eguchi. Air escape channels are provided by Eguchi ref.

Argument re claim 47: Claim 47 adds inlet and outlet ports to claim 46. Antoni ref teaches the inlet and outlet ports as in the applicant's invention.

Argument re rejection of claims 59-61: Arguments of sections B-2, B-3 and B-5, rounded ridges, flash channels, and surface treatment have been responded above.

Argument re rejection of claims 12 and 24: Antoni ref was already discussed above. Antoni ref does not specify the type of welding. Secondary ref Gizowski was used to show that laser welding could be used for the welding taught by Antoni.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Krishnan Menon
Patent Examiner

W. L. WALKER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700